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Research that matters – irrigants and disinfectants

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Research that matters

Ever since online platforms have been installed, and the whole submission process has been digitised, submissions are just a few mouse clicks away. If a manuscript gets rejected, reformatting it using current reference management software and then sending it to the next journal is easy. Seemingly. However, anybody involved with research knows how cumbersome it can be to write a concise manuscript. This effort should be honoured by the full attention of those people who judge the submitted papers regarding their suitability to be published. The international Endodontic Journal (IEJ) has enjoyed a steady increase in submissions over the recent years. However, I am sometimes not sure whether “enjoyed” is an appropriate term, as the quality of the submitted manuscripts has not necessarily improved. Just in the area of irrigation and root canal disinfection – which happens to be my field of responsibility – submissions have almost doubled in 2011 compared to 2010. By the end of May 2012, we have already received as many manuscripts as in the whole year of 2010. Many manuscripts that are sent to our journal are still in formats that suspiciously resemble those of other major publications in the field.

The load of new submissions has prompted us to install a pre-screening process at the editor and associate editor level. This is to concentrate on the work of quality. It also means that those manuscripts, which stand no chance of being accepted, are not sent to our exceedingly busy referees anymore. If we have to exclude some work from further review, this invariably leads to the question of what good research is. As a group of people judging what others do, we cannot help but form a thought collective (Fleck 1935). This means that it is always possible that some ground-breaking work gets overlooked because it goes against a currently held paradigm. However, at the IEJ, we try hard to not be judgemental. In other words, there is no specific type of research or topic that we do not consider for publication, as long as it has got something to do with endodontology. We merely try to reject repetitive work or ill-controlled studies. We would like to emphasize that good research should reveal causality. Apart from this, good research should address a relevant question. This is where the issue becomes slightly subjective. At this point, I shall list two or three types of studies which, judging from the number of submissions, many people appear to deem interesting, yet stand little chance to get published in the IEJ at this point:

- Studies on smear layer removal in single-rooted, extracted teeth based on SEM scans of the canal walls (De-Deus *et al.* 2011). Smear layer or its removal is not something that,

per se, has any clinical relevance. In vital cases, dentinal filings may even be useful (Tronstad 1978). Furthermore, the root canal walls show complex structures with few open tubules in the apical third, which cannot be discerned from smear layer (Mjör *et al.* 2001). Hence the common, most likely erroneous, finding in such studies that “smear layer removal was less successful” in the apical third. Nevertheless, study designs, which address the above-mentioned issues and/or show effects of smear layer or dentinal debris are still welcome.

- Studies on the effect of root canal irrigants or dressings on the Vickers or Knoop hardness of root dentine. Dentine is a relatively soft composite material, and is not suitable for such tests (Herkströter *et al.* 1989). At least not unless a nano-indentation apparatus is used.
- Studies on the effectiveness of natural disinfectants such as Propolis, Curcumin, *morinda citrifolia* juice etc., light-induced disinfection, ozone, or any other approach against *Enterococcus faecalis* without using sodium hypochlorite as a control. First, *E. faecalis* is a species that grows well in the laboratory, yet is not a major cause of periapical disease or even post-treatment periapical disease (Zehnder & Guggenheim 2009). We know that it is tolerant against calcium hydroxide when present in dentinal tubules (Safavi *et al.* 1990). Hence, it is not fair to compare dentinal tubule disinfection between calcium hydroxide and any other new potential endodontic disinfectant. My guess would be that a suspension of table salt would be as effective as calcium hydroxide in this context, because of the mere osmotic pressure it exerts. Instead, new disinfectants should be compared to sodium hypochlorite, the best anti-biofilm agent known. Moreover, it should be kept in mind that sodium hypochlorite and calcium hydroxide combine well and are the best chemicals we currently have to dissolve organic matter from the root canal space (Hasselgren *et al.* 1988).

These were just some examples based on the number of recently rejected manuscripts. In summary, we should all concentrate on research that matters. In brief: class over mass. We should scrutinize paradigms and open new field of interest. This means that ultimately, the patient should profit from our research. We are looking forward to your innovative and scientifically sound submissions.

Sincerely

Matthias Zehnder

References:

- De-Deus G, Reis C, Paciornik S (2011) Critical appraisal of published smear layer-removal studies: methodological issues. *Oral Surgery Oral Medicine Oral Pathology Oral Radiology Endodontics* **112**, 531-43.
- Fleck L (1979) Genesis and development of a scientific fact. The University of Chicago Press, Chicago (originally published as *Entstehung und Entwicklung einer wissenschaftlichen Tatsache: Einführung in die Lehre vom Denkstil und Denkkollektiv*, Benno Schwabe & Co., Basel 1935).
- Hasselgren G, Olsson B, Cvek M (1988) Effects of calcium hydroxide and sodium hypochlorite on the dissolution of necrotic porcine muscle tissue. *Journal of Endodontics* **14**, 125-7.
- Herkströter FM, Witjes M, Ruben J, Arends J (1989) Time dependency of microhardness indentations in human and bovine dentine compared with human enamel. *Caries Research* **23**, 342-4.
- Mjör IA, Smith MR, Ferrari M, Mannocci F (2001) The structure of dentine in the apical region of human teeth. *International Endodontic Journal* **34**, 346-53.
- Safavi KE, Spångberg LS, Langeland K (1990) Root canal dentinal tubule disinfection. *Journal of Endodontics* **16**, 207-10.
- Tronstad L (1978) Tissue reactions following apical plugging of the root canal with dentin chips in monkey teeth subjected to pulpectomy. *Oral Surgery Oral Medicine Oral Pathology* **45**, 297-304.
- Zehnder M, Guggenheim B (2009) The mysterious appearance of enterococci in filled root canals. *International Endodontic Journal* **42**, 277-87.